AMENDMENTS TO THE CLAIMS

Claims 1-13 (Canceled)

14. (Previously Presented) The composition of claim 48, wherein at least a portion of said structural matrix is a modified alginate matrix that comprises at least one alginate chain section bonded to at least one molecule that mediates cellular interactions utilizing one or more uronic acid residues on said alginate chain section.

15. (Previously Presented) The composition of claim 48, wherein at least a portion of said structural matrix is a modified alginate matrix that comprises at least one alginate chain section bonded to at least one cellular interaction molecule selected from the group consisting of cell adhesion molecules, cell attachment peptides, proteoglycan attachment peptide sequences, proteoglycans, cell adhesion polysaccharides, growth factors and cell adhesion enzymes.

16. (Original) The composition of claim 15, wherein at least a portion of said structural matrix is a modified alginate matrix that comprises at least one alginate chain section bonded to at least one cellular interaction molecule selected from the group consisting of an RGR peptide, fibronectin, bitronectin, Laminin A, Laminin B1, Laminin B2, collagen 1 and thrombospondin.

17. (Previously Presented) The composition of claim 48, wherein at least a portion of said structural matrix is a modified alginate matrix prepared by a method comprising:

(a) providing a solution of a hydrogel-forming material and a surfactant;

(b) mixing said solution in the presence of a gas to form a stable foam;

(c) exposing said stable foam to conditions or agents that result in gelling of the hydrogel-forming material and in the generation of gas bubbles therein; and

(d) exposing the hydrogel containing gas bubbles to a vacuum to release the gas and form the hydrogel material having macroporous open pore porosity.

18. (Previously Presented) The composition of claim 48, wherein at least a portion of said structural matrix is a modified alginate matrix prepared by a method comprising:

(a) providing a solution of a hydrogel-forming material, a surfactant and a gas-generating component, wherein said solution is capable of being mixed in the presence of a gas to incorporate the gas in the solution and form a stable foam;

(b) mixing said solution in the presence of a gas to form a stable foam;

(c) exposing said stable foam to conditions or agents that result in gelling of the hydrogel-forming material and to conditions or agents that result in generation of gas from the gas-generating component, to form a hydrogel containing gas bubbles therein; and

(d) exposing said hydrogel containing gas bubbles therein to a vacuum to release the gas and to form the hydrogel material having macroporous open pore porosity.

Claims 19-47 (Canceled)

48. (Currently amended) A composition comprising at least a first nucleic acid segment in non-covalent association with a structural, porous modified alginate matrix, that comprises at least one alginate chain section modified by covalent bonding [~~bonded~~] to at least one molecule that mediates cellular interactions.

Claims 49-53 (Canceled)

54. (Original) A method for making a structural matrix-nucleic acid composition, comprising providing at least a first nucleic acid segment to a structural matrix, wherein at least a portion of said structural matrix is comprised of a porous polymer that contains pores formed by gas foaming and pores formed by leaching out of a particulate from the polymer.

55. (Original) The method of claim 54, comprising leaching out the particulate material from a composition comprising a gas foamed polymeric material, at least a first nucleic acid segment and a leachable particulate material.

56. (Original) The method of claim 55, comprising the steps of:

(a) preparing an admixture comprising at least a first nucleic acid segment, particles of a polymeric material capable of forming a gas foamed polymeric structure and a leachable particulate material;

(b) subjecting said admixture to a gas foaming process to create a porous polymeric structure that comprises said at least a first nucleic acid segment and said leachable particulate material; and

(c) subjecting said porous polymeric structure to a leaching process that removes said leachable particulate material from said porous polymeric structure, thereby producing a polymeric structure of additional porosity that comprises said at least a first nucleic acid segment.

57. (Original) The method of claim 56, wherein said admixture is prepared by first incorporating said at least a first nucleic acid segment within said particles of a polymeric material and then admixing with said leachable particulate material.

58. (Original) The method of claim 57, wherein said admixture is prepared by first incorporating said at least a first nucleic acid segment within polymer beads or microspheres and then admixing with said leachable particulate material.

59. (Original) The method of claim 56, wherein the gas foaming process of step (b) comprises subjecting said admixture to an elevated pressure atmosphere of an inert gas in a manner effective to dissolve said gas into said polymeric material, and subjecting the gas-dissolved polymeric material to thermodynamic instability in a manner effective to cause nucleation and growth of gas pores sufficient to produce a continuous matrix of polymeric material that comprises said at least a first nucleic acid segment and said leachable particulate material.

60. (Original) The method of claim 59, wherein said thermodynamic instability is created by reducing said elevated pressure atmosphere.

61. (Original) The method of claim 56, wherein said leachable particulate material is a water-soluble leachable particulate material.

62. (Original) The method of claim 61, wherein said leachable particulate material is a salt, sugar or sugar alcohol.

63. (Original) The method of claim 62, wherein said leachable particulate material is NaCl, trehalose, glucose, sucrose or mannitol.

64. (Original) The method of claim 56, wherein said leaching process is conducted *in vitro* by contacting said porous polymeric material with a leaching agent.

65. (Original) The method of claim 56, wherein said leaching process is conducted *in vivo* by exposing said porous polymeric material to body fluids.

Claims 66-105 (Canceled)

106. (Previously Presented) The composition of claim 125, wherein said nucleic acid segment encodes a growth hormone (GH) protein or polypeptide, a parathyroid hormone (PTH) protein or polypeptide, a PTHI-34 polypeptide or a bone morphogenetic protein (BMP) protein or polypeptide.

107. (Previously Presented) The composition of claim 106, wherein said nucleic acid segment encodes a BMP-2A, BMP-213, BMP-3, BMP-4, BMP-5, BMP-6, BMP-7 or BMP-8 protein or polypeptide.

108. (Previously Presented) The composition of claim 125, wherein said nucleic acid segment encodes a transforming growth factor-ut (TGF-a), TGF-PI or TGF-P2 protein or polypeptide, a latent TGFP binding protein (LTBP) protein or polypeptide, an activin/inhibin protein or polypeptide, a fibroblast growth factor (FGF), a granulocyte/macrophage colony stimulating factor (GMCSF), an epidermal growth factor (EGF), a platelet derived growth factor (PDGF), an insulin-like growth factor (IGF) or a leukemia inhibitory factor (LIF).

Claims 109-117 (Canceled)

118. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment is a DNA molecule, an antisense nucleic acid molecule or a ribozyme.

119. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment is comprised within a plasmid or a recombinant expression vector.

120. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes a marker protein.

121. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes a protein or polypeptide that stimulates a bone progenitor cell when expressed in said cell.

122. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes a protein or polypeptide that stimulates a wound healing fibroblast, granulation tissue fibroblast or repair cell when expressed in said cell.

123. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes an antigenic or immunogenic protein or polypeptide that stimulates an immune response when expressed by an antigen presenting cell.

124. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes a cytotoxic or apoptosis-inducing protein or polypeptide that induces cell death upon expression in a cell.

125. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes a transcription or elongation factor, cell cycle control protein, kinase, phosphatase, DNA repair protein, oncogene, tumor suppressor, angiogenic protein, anti-angiogenic protein, immune response stimulating protein, cell surface receptor, accessory signaling molecule, transport protein, enzyme, anti-bacterial or anti-viral protein or polypeptide, hormone, neurotransmitter, growth factor, growth factor receptor, interferon, interleukin, chemokine, cytokine, colony stimulating factor or chemotactic factor protein or polypeptide.

126. (Previously Presented) The composition of claim 48, wherein said nucleic acid segment encodes a human protein or polypeptide.

127. (Previously Presented) The composition of claim 48, comprising at least a first and second nucleic acid segment.

128. (Previously Presented) The composition of claim 48, comprising a plurality of nucleic acid segments.

129. (Previously Presented) The composition of claim 48, further comprising a population of cells.

130. (Previously Presented) The composition of claim 129, wherein at least a portion of said nucleic acid segment is taken up by the cells comprised within said composition.

Claims 131-132 (Canceled)